1507

NEUROMUSCULAR OUTCOME IN INFANTS UNDER 1001 GM STUDIED PROSPECTIVELY WITH ECHOENCEPHALOGRAPHY (ECHO) FOR INTRACRANIAL HEMORRHAGE (ICH). William L. Salomon, David K. Stevenson, Dieter R. Enzman, Stanford Univ. Sch. of Med., Depts. of Ped. & Radiology, Stanford, CA.

All infants under 1001 gms were studied prospectively with ECHO within 24 hrs of admission to the Stanford ICN between 1/1/80 and 6/30/83. They were re-evaluated at least twice weekly, and scored by Papille's classification for ICH and for atrophy and hydrocephalus (HC). Of the 150 infants, 92 (61%) were discharged and examined yearly. Seven were excluded (4 deaths, 1 encephalocoele, 1 lost to followup, 1 late non-neonatal neurologic injury).

		nl ECHO	Atrophy/HC	ICH I II	ICH III IV
nl ND	n=	39/45 (85%)	0	25/34 (74%)	0
exam	wt (gm)	879±104		821±87	
Gest age (wks)		26.6±1.5		26.5±1.4	
abnl ND	n=	7/46 (15%)	3	9/34 (26%)	3
exam	wt (gm)	715±71	880±92	788±88	890±101
Gest age (wks)		26.9±0.7	27.3±1.3	25.8±1.3	26.3±1.5

These data suggest that although infants with Grade I & II ICH have more abnormal neurodevelopmental (ND) exams, these infants still have good potential for normal neurological function (74%). However, infants with Grade III & IV ICH or isolated atrophy and/or HC may have a poorer prognosis, with no normal exams. Infants with a normal ECHO but an abnormal exam had low birth weights when compared to those with a normal ND exam and also had serious complications of Candida sepsis (3), asphyxia (1), hypothyroidism (1), pneumonia (1), and histiocytosis X (1).

1508

WEIGHT GAIN AND SERUM BILIRUBIN IN NEWBORNS WITH RDS TREATED WITH PANCURONIUM BROMIDE, Jose Saraiva, Myra Rosado, Michael F. Epstein, Department of Pediatrics, Harvard Medical School, Boston, MA.

In order to examine the effect of pancuronium bromide (PBr) on body weight and serum bilirubin, we retrospectively reviewed the charts of 100 infants with RDS treated with mechanical ventilation. PBr was ordered according to each physician's judgment and was used in 51 infants. Both groups were similar in gestational age, (30.5±3.5 (PBr) vs. 30.1±2.8wk), male/female distribution, and survival, but patients in the PBr group had higher birth weight (1680±80 vs. 1400±50g, $p<.05$). Infants treated with PBr gained weight during the first three days and showed a larger Δ wt (daily - birth weight) than the control group during the first week (PBr, +42±14g vs. noPBr, -35±12g, $p<.01$). Edema was present in 27 PBr-treated infants and in 13 of those not treated with PBr ($p<.05$). In addition, hyperbilirubinemia was more severe and more prolonged in patients treated with PBr. The two groups had similar serum bilirubin on days 1 to 5 but serum bilirubin was significantly greater in the treated group on days 6 to 10 (d.6 PBr 10.5±0.6 vs. noPBr 8.6±0.4 mg/dl, $p<.02$).

The use of PBr was associated with edema, excessive weight gain in the first week of life, and a higher, more prolonged peak of serum bilirubin. These findings remained valid when subgroups matched for severity of hypoxia on day one were examined in order to control for severity of underlying lung disease.

1509

LONG TERM FOLLOW-UP OF INFANTS WITH BRONCHOPULMONARY DYSPLASIA (BPD). Reg S. Sauve, Nalini Singhal (Spon. by Robert H.A. Haslam) University of Calgary, Dept. of Pediatrics, Calgary, Alberta, Canada.

179 infants with BPD and 112 matched controls were compared in terms of perinatal factors and long-term outcome (1-8 yrs). Perinatal factors significantly ($p<.001$) more common in cases were, gestational age $\leq$ 29 weeks, hyaline membrane disease, episodes of hypoxia and acidosis, interstitial emphysema, pneumothorax, patent ductus arteriosus, long duration of assisted ventilation, episodes of endotracheal tube plugging, atelectasis, post extubation airway obstruction, $\geq$ 10 blood transfusions and the need for parenteral nutrition. 20 cases and 1 control ($p<.001$) died after discharge from hospital. Significant differences in outcome ($p<.002$) included increased frequency of lower respiratory illness, rehospitalization during the first year of life, abnormal physical findings on chest exam, growth deficits and the occurrence of retrolental fibroplasia. Neurodevelopmental outcomes, hearing and speech disorders, were more frequent in cases, but differences were not significant. 24/99 (24.2%) of cases and 7/49 (14.3%) of controls had cognitive delays, 28/141 (19.9%) or cases and 8/66 (12.1%) of controls had abnormalities on the Test of Gross Motor and reflex development, and 15/141 (10.6%) of cases and 5/66 (7.6%) of controls had cerebral palsy. Infants with BPD had higher post discharge mortality and morbidity rates in some areas, but differences in neurodevelopmental outcome were not significantly different in the two groups.

†1510

BILIRUBIN TOXICITY OF NEURAL CELLS IN CULTURE. David Schiff, George Chan and Mark Poznansky. University of Alberta, Department of Pediatrics and Physiology, Edmonton, Alberta, Canada.

Bilirubin (B) toxicity was investigated in 2 neural cell lines NBRI0A and N115 using a quantitative dye assay (MTT) as a measure of cell viability and 3 H-Thymidine incorporation as a measure of DNA synthesis. The cells are adapted to grow in a protein free medium. Bilirubin concentration varying between 0.3 and 0.003 mM at bilirubin/albumin molar ratio (B/A) of 0.5 to 1.5 are introduced to the media and incubated for 2 and 24 hours. MTT (0.5 mg/ml) and/or 3 H-Thymidine (1 μ Ci/dish) are added and incubated for a further 2 hours. Short exposures to B even up to a B/A of 1.5 showed no evidence of toxicity using both assays. After a 24 hour exposure to B, a decrease in cell viability and 3 H-Thymidine incorporation was detected at B/A of 0.8 when B was 0.1 mM or higher, whereas at lower B at this molar ratio showed no deleterious effect. At B/A of 1.5 and B of 0.3 mM the decrease in viability was 90% and only 20% when B was 0.025 mM for NBRI0A. N115 followed a similar but less dramatic response. The concentration effect is more evident in the 3 H-Thymidine studies. At B/A of 2.5 and B of 0.075 mM or higher, there were both cell kill (decrease in DNA levels) and inhibition of 3 H incorporation (decrease in specific activity). When B is reduced to 0.03 mM, even at B/A of 1.5 there was little or no cell death (no change in DNA levels), but decrease in DNA synthesis (42% decrease in specific activity) still existed. Results showed viability and function of these neural cell lines is dependent not only on B/A but also on absolute concentrations of B, and time of exposure.

1511

RANGE-GATED PULSED DOPPLER DETERMINATION OF ASCENDING AORTIC FLOW IN HEALTHY NEONATES. J. S. Schlessel, M. Goldman, M. LaCorte, R. Harper.

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Ascending aortic blood flow was determined in 6 healthy neonates by range-gated pulsed Doppler technique in the 1st 72 hrs. of life. None of the infants had evidence of structural heart disease or patent ductus arteriosus by 2-D Echo. and all were AGA. The descending aorta was visualized by 2-D Echo from a subcostal view and Doppler spectral waveforms were obtained within the ascending aorta. Mean flow velocity during systole was determined by digitizing and integrating the area under the Doppler flow during 3 consecutive systolic intervals with a microsonics computer. Ascending aortic blood flow during systole was calculated by using the formula: mean flow velocity x cross-sectional area of the aorta. Ascending aortic blood flow per minute was computed by the formula: systolic ascending aortic blood flow x heart rate. Heart rate was obtained by simultaneously recorded EKG. Mean ascending aortic blood flow was 187±17 ml/min/kg for these 6 neonates. These results are comparable to historical standards for systemic blood flow as determined by the thermolulution and Fick principle derived systemic blood flow. Our study confirms that range-gated pulsed Doppler technique offers a reliable method for non-invasive determination of ascending aortic blood flow.

†1512

BACTERIA CAUSING A FALSE POSITIVE TEST FOR PHOSPHATIDYLGLYCEROL (PG) IN AMNIOTIC FLUID. Robert E. Schumacher, Valerie M. Parisi, Henry M. Steady, Francis H.C. Tsao, Univ. of Wisc., Dept. of Pediatrics, Madison. (Spon. by SM Donn).

Measurement of amniotic fluid PG is often used to assess fetal lung maturation. We documented three cases of chorioamnionitis where PG was present despite L/S ratios indicative of pulmonary immaturity. In one case PG was present in a vaginal pool specimen yet absent in a specimen obtained via amniocentesis. We hypothesized that bacterial organisms present may be responsible for the production of PG. E. coli isolated from amniotic fluid and neonatal blood was cultured in broth. One ml of 10^5 colony forming units (CFU) per ml of E. coli was added to 4 ml of broth. One ml samples were removed at 0, 2, 3, and 4 hours and frozen at -65°C until phospholipid analysis was performed. A sample of broth containing no bacteria served as control. Specimens were analyzed for the presence of PG by a one dimensional thin-layer chromatographic (TLC) method. Positive test results were confirmed by two dimensional TLC. PG was present in cultured specimens at 3 and 4 hours incubation (270×10^6 and 4000×10^6 CFU, respectively). Broth alone and at 0 and 2 hours (2×10^6 and 110×10^6 CFU) contained no detectable PG. It appeared that more PG was present in the specimen incubated the longest. We conclude that bacteria regarded as normal flora can produce PG in detectable amounts and patients with amniotic fluid samples contaminated by growing bacteria may have detectable PG secondary to bacterial rather than fetal production of PG. These observations may weaken the usefulness of PG detection as predictive of lung maturity in patients with amniotic fluid samples contaminated by bacteria.